Date: January, 2004

Guidelines For Estimating
Barley & Corn Silage Costs

This guide is designed to provide you with planning information and a format for calculating the cost of producing barley & corn silage.

The major advantage of silage is that the crop can be harvested when it is ready in almost all weather conditions. Since there are fewer harvesting losses, more nutrients are harvested per acre compared with most other systems. Ensiling permits the use of a wider range of crops including grasses, legumes, grains, corn and miscellaneous salvage crops that have suffered weather damage or weed infestation.

The major disadvantages of silage compared with hay is that it requires more capital investment and labour. Also, silage has limited market potential, because trucking costs limit distance to market, it must be produced near the location where it will be fed.

Producers are encouraged to calculate their own costs of production. Each farm has a different set of costs and yields due to varying soil types, climatic conditions and agronomic practices.

Disclaimer: This budget is only a guide and is not intended as an in depth study of this industry. Interpretation and utilization of this information is the responsibility of the user. If you require assistance with developing your individual budget, please contact your local MAFRI Farm Management Specialist or Regional Forage Specialist.

Barley & Corn Silage Cost Summary - January, 2004

	Barley Silage		Corn Silage		
A. Operating Costs	**Cost/ Acre**	**Cost/ Ton Wet**	**Cost/ Acre**	**Cost/ Ton Wet**	**Your Cost**
1.01 Seed	$10.00	$1.82	$40.00	$3.20	
1.02 Fertilizer	$32.34	$5.88	$50.80	$4.06	
1.03 Chemicals	$5.00	$0.91	$29.50	$2.36	
1.04 Field Fuel Costs	$8.17	$1.49	$19.03	$1.52	
1.05 Moving Fuel Costs	$0.90	$0.16	$2.05	$0.16	
1.06 Packing Fuel Costs	$0.88	$0.16	$2.00	$0.16	
1.07 Repair & Maintenance	$9.40	$1.71	$12.80	$1.02	
1.08 Insurance	$4.94	$0.90	$6.20	$0.50	
1.09 Miscellaneous	$7.50	$1.36	$8.50	$0.68	
1.10 Land Taxes	$6.50	$1.18	$8.00	$0.64	
Subtotal Operating	$85.63	$15.57	$178.88	$14.31	
1.11 Interest on Operating	$2.35	$0.43	$4.92	$0.39	
Total Operating Costs	**$87.98**	**$16.00**	**$183.80**	**14.70**	
B. Fixed Costs					
2. Depreciation					
2.01 Cropping Equipment	$8.25	$1.50	$15.00	$1.20	
2.02 Silage Equipment	$12.00	$2.18	$12.00	$0.96	
2.03 Bunker Storage	$1.00	$0.18	$2.00	$0.16	
3. Investment					
3.01 Land	$22.00	$4.00	$32.00	$2.56	
3.02 Cropping Equipment	$4.03	$0.73	$7.33	$0.59	
3.03 Silage Equipment	$2.93	$0.53	$2.93	$0.23	
3.04 Bunker Storage	$0.20	$0.04	$0.40	$0.03	
Total Fixed Costs	**$50.42**	**$9.17**	**$71.67**	**$5.73**	
C. Labour					
4.01 Cropping	$8.75	$1.59	$11.31	$0.90	
4.02 Swathing	$1.25	$0.23	$0.00	$0.00	
4.03 Harvesting	$1.33	$0.24	$3.20	$0.26	
4.04 Trucking	$2.66	$0.48	$6.40	$0.51	
4.05 Bunker	$1.33	$0.24	$3.20	$0.26	
Total Labour Costs	**$15.32**	**$2.79**	**$24.11**	**$1.93**	
Total Cost of Production	**$153.72**	**$27.95**	**$279.58**	**$22.37**	
Estimated yield per acre					
Wet ton		**5.5**		**12.5**	

Disclaimer: This budget is only a guide and is not intended as an in depth study of the cost of production of this industry. Interpretation and utilization of this information is the responsibility of the user.

Silage (Barley) Cost of Production Worksheet
Assumptions

1. This budget provides a guideline to determine the cost of production for a silage enterprise.

2. Investment in machinery, equipment and storage is $235 /acre. It was assumed that the machinery complement was similar to a grain enterprise, except for the combine and the addition of a forage harvester, a windrower and a packer.

3. A yield of 5.5 tons (wet) per acre was assumed.

4. A land value of $550 per acre was assumed.

A. Operating Costs				Your Farm
1.01 Seed				
		2.00	bushels/acre	
	x	$5.00	seed cost ($/bu)	
	=	**$10.00**	**$ /acre**	
1.02 Fertilizer				
Nitrogen		70	lbs/acre	
	x	$0.33	cost/lb	
	=	$23.10	$ /acre	
P_2O_5		33	lbs/acre	
	x	$0.28	cost/lb	
	=	$9.24	$ /acre	
K_2O		0	lbs/acre	
	x	$0.150	cost/lb	
	=	$0.00	$ /acre	
Sulfur		0	lbs/acre	
	x	$0.26	cost/lb	
	=	$0.00	$ /acre	

Zinc		0	lbs/acre	
	x	$1.50	cost/lb	
	=	$0.00	$ /acre	
Total	**=**	**$32.34**	**$ /acre**	

1.03 Chemicals

	$5.00	weed control	
+	$0.00	disease control	
+	$0.00	insect control	
=	**$5.00**	**$ /acre**	

1.04 Field Fuel Costs

Operation	Times Over	Width feet	Speed mph	Fuel $/ac.	
Cultivate Fall	1	48	5	$1.18	
Spray - Burn Off	1	80	10	$0.21	
Plant	1	40	5	$1.42	
Windrow	1	24	5	$1.42	
Forage Harvester	1	24	3	$3.94	
Total				**$8.17**	

1.05 Moving Fuel Costs

	5.50	gross yield tons/acre	
÷	20.0	truck capacity (tons)	
=	0.275	trips/acre	
x	3	miles/trip	
=	0.825	total miles/acre	
÷	2.0	fuel consumption (miles/gal)	
=	1.875	litres/acre (4.546 litres/gal)	
x	$0.48	fuel cost ($/litre)	
Total	**=**	**$0.90**	**$ /acre**	

1.06 Packing Fuel Costs

	1,500	acres
x	5.50	tons average yield
=	8250	tons total yield
÷	45	tons/hour
=	183.33	hours
x	15	litres/hour
=	2750	litres
x	$0.48	$/litre
=	$1,320	total cost
÷	1,500	acres
=	**$0.88**	**$ /acre**

1.07 Repair & Maintenance (includes annual cost of silage cover)

	0.04	% repair rate
x	$235	investment/acre
=	**$9.40**	**$ /acre**

1.08 Insurance

	$1.54	crop insurance
+	$3.40	hail insurance
=	**$4.94**	**$ /acre**

1.09 Miscellaneous

=	**$7.50**	**$ /acre**

1.10 Land Taxes

=	**$6.50**	**$ /acre**

1.11 Interest on Operating

	$85.63	subtotal operating
÷	2	average
x	0.055	% interest rate
=	**$2.35**	**$ /acre**

Capital Costs

	Total	Per Acre	
Land Market Value	$825,000	$550.00	_____
Cropping Equipment (does not include combine)	$137,500	$91.67	_____
Silage Equipment (includes forage harvester, windrower, trucks and packer)	$200,000	$133.33	_____
Bunker Storage	$15,000	$10.00	_____
Total Investment	**$1,177,500**		_____
Total Machinery & Bunker Investment/acre		**$235.00**	_____

B. Fixed Costs

2. Depreciation

$$\frac{\text{Original Value - Salvage Value}}{\text{Useful Life}}$$

2.01 Cropping Equipment

	$91.67	cost/acre	_____
-	$9.17	salvage value	_____
÷	10	useful life	_____
=	**$8.25**	**$ /acre**	_____

2.02 Silage Equipment

	$133.33	cost/acre	_____
-	$13.33	salvage value	_____
÷	10	useful life	_____
=	**$12.00**	**$ /acre**	_____

2.03 Bunker Storage

	$10.00	cost/acre	
-	$0.00	salvage value	
÷	10	useful life	
=	**$1.00**	**$ /acre**	

3. Investment

Original Value + Salvage Value x Investment Rate
2

3.01 Land

	$550.00	cost/acre	
x	0.040	% investment rate	
=	**$22.00**	**$ /acre**	

3.02 Cropping Equipment

	$91.67	cost/acre	
+	$9.17	salvage value	
x	0.040	% investment rate	
=	**$4.03**	**$ /acre**	

3.03 Silage Equipment

	$133.33	cost/acre	
+	$13.33	salvage value	
÷	2	average	
x	0.040	% investment rate	
=	**$2.93**	**$ /acre**	

3.04 Bunker Storage

	$10.00	cost/acre	
+	$0	salvage value	
÷	2	average	
x	0.040	% investment rate	
=	**$0.20**	**$ /acre**	

C. Labour

Cropping		0.875	cropping hours/acre	_____
	x	$10.00	$/hour	_____
	=	$8.75	$ /acre	_____
				_____
Swathing		0.125	swathing hours/acre	_____
	x	$10.00	$/hour	_____
	=	$1.25	$ /acre	_____
				_____
Harvesting		0.133	harvesting hours/acre	_____
	x	$10.00	$/hour	_____
	=	$1.33	$ /acre	_____
				_____
Trucking		0.266	trucking hours/acre	_____
	x	$10.00	$/hour	_____
	=	$2.66	$ /acre	_____
				_____
Packing		0.133	bunker hours/acre	_____
	x	$10.00	$/hour	_____
	=	$1.33	$ /acre	_____
Total	=	**$15.32**	$ /acre	

Silage (Corn) Cost of Production Worksheet
Assumptions

1. This budget provides a guideline to determine the cost of production for a silage enterprise.

2. Investment in machinery, equipment and storage is $320 /acre. It was assumed that the machinery complement was similar to a grain enterprise, except for the combine and the addition of a forage harvester, a windrower and a packer.

3. A yield of 12.5 tons (wet) per acre was assumed.

4. A land value of $800 per acre was assumed.

A. Operating Costs				Your Farm
1.01 Seed				
		25,000	plants/acre	
	x	$0.0016	seed cost ($/plant)	
	=	**$40.00**	**$ /acre**	
1.02 Fertilizer				
Nitrogen		90	lbs/acre	
	x	$0.33	cost/lb	
	=	$29.70	$ /acre	
P_2O_5		40	lbs/acre	
	x	$0.28	cost/lb	
	=	$11.20	$ /acre	
K_2O		40	lbs/acre	
	x	$0.150	cost/lb	
	=	$6.00	$ /acre	
Sulfur		15	lbs/acre	
	x	$0.26	cost/lb	
	=	$3.90	$ /acre	

Zinc		0	lbs/acre	
	x	$1.50	cost/lb	
	=	$0.00	$ /acre	
Total	**=**	**$50.80**	**$ /acre**	

1.03 Chemicals

	$29.50	weed control	
+	$0.00	disease control	
+	$0.00	insect control	
=	**$29.50**	**$ /acre**	

1.04 Field Fuel Costs

Operation	Times Over	Width feet	Speed mph	Fuel $/ac.	
Fall HD Disc	1	18	5	$3.15	
Cultivate	1	48	6	$0.98	
Cultivate & Fertilizer	1	60	7	$0.41	
Plant	1	24	5	$2.36	
Spray	2	80	6	$0.71	
Row Crop Cultivate	2	48	6	$1.97	
Forage Harvester	1	10	3	$9.45	
Total				$19.03	

1.05 Moving Fuel Costs

	12.50	gross yield tons/acre	
÷	20.0	truck capacity (tons)	
=	0.625	trips/acre	
x	3	miles/trip	
=	1.875	total miles/acre	
÷	2.0	fuel consumption (miles/gal)	
=	4.262	litres/acre (4.546 litres/gal)	
x	$0.48	fuel cost ($/litre)	
Total	**=**	**$2.05**	**$ /acre**

1.06 Packing Fuel Costs

	1,500	acres	
x	12.50	tons average yield	
=	18750	tons total yield	
÷	45	tons/hour	
=	416.67	hours	
x	15	litres/hour	
=	6250	litres	
x	$0.48	$/litre	
=	$3,000	total cost	
÷	1,500	acres	
=	**$2.00**	**$ /acre**	

1.07 Repair & Maintenance (includes annual cost of silage cover)

	0.04	% repair rate	
x	$320	investment/acre	
=	**$12.80**	**$ /acre**	

1.08 Insurance

	$1.80	crop insurance	
+	$4.40	hail insurance	
=	**$6.20**	**$ /acre**	

1.09 Miscellaneous

=	**$8.50**	**$ /acre**	

1.10 Land Taxes

=	**$8.00**	**$ /acre**	

1.11 Interest on Operating

	$178.88	subtotal operating	
÷	2	average	
x	0.055	% interest rate	
=	**$4.92**	**$ /acre**	

Capital Costs

	Total	Per Acre	
Land Market Value	$1,200,000	$800.00	_____
Cropping Equipment (does not include combine)	$250,000	$166.67	_____
Silage Equipment (includes,forage harvester,corn header, trucks and packer)	$200,000	$133.33	_____
Bunker Storage	$30,000	$20.00	_____
Total Investment	**$1,680,000**		_____
Total Machinery & Bunker Investment/acre		**$320.00**	_____

B. Fixed Costs

2. Depreciation $\frac{\text{Original Value - Salvage Value}}{\text{Useful Life}}$

2.01 Cropping Equipment

	$166.67	cost/acre	_____
-	$16.67	salvage value	_____
÷	10	useful life	_____
=	**$15.00**	**$ /acre**	_____

2.02 Silage Equipment

	$133.33	cost/acre	_____
-	$13.33	salvage value	_____
÷	10	useful life	_____
=	**$12.00**	**$ /acre**	_____

2.03 Bunker Storage

$20.00	cost/acre	
- $0.00	salvage value	
÷ 10	useful life	
= **$2.00**	**$ /acre**	

3. Investment $\frac{\text{Original Value + Salvage Value}}{2}$ x **Investment Rate**

3.01 Land

$800.00	cost/acre	
x 0.04	% investment rate	
= **$32.00**	**$ /acre**	

3.02 Cropping Equipment

$166.67	cost/acre	
+ $16.67	salvage value	
x 0.04	% investment rate	
= **$7.33**	**$ /acre**	

3.03 Silage Equipment

$133.33	cost/acre	
+ $13.33	salvage value	
÷ 2	average	
x 0.040	% investment rate	
= **$2.93**	**$ /acre**	

3.04 Bunker Storage

$20.00	cost/acre	
+ $0	salvage value	
÷ 2	average	
x 0.040	% investment rate	
= **$0.40**	**$ /acre**	

C. Labour

Cropping		1.131	cropping hours/acre	
	x	$10.00	$/hour	
	=	$11.31	$ /acre	
Swathing		0.000	swathing hours/acre	
	x	$10.00	$/hour	
	=	$0.00	$ /acre	
Harvesting		0.320	harvesting hours/acre	
	x	$10.00	$/hour	
	=	$3.20	$ /acre	
Trucking		0.640	trucking hours/acre	
	x	10.00	$/hour	
	=	$6.40	$ /acre	
Packing		0.320	bunker hours/acre	
	x	$10.00	$/hour	
	=	$3.20	$ /acre	
Total	=	**$17.71**	$ /acre	

For further information contact your local Manitoba Agriculture office.

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